The role of the MSU College of Agriculture and Natural Resources in strengthening Michigan's economy

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Good afternoon and thank you for providing me this opportunity to speak on behalf of the Michigan State University College of Agriculture and Natural Resources, the Michigan Agricultural Experiment Station and MSU Extension. I represent Dr. Jeffrey Armstrong, Dean of the College, and Dr. Steve Pueppke, Director of the Michigan Agricultural Experiment Station as well as myself as director of MSU Extension.

These are challenging times for the families, communities and industries of our state. We are pleased to be associated with strong economic sectors, including agriculture, natural resources and tourism that have the potential to contribute significantly to Michigan's economic turnaround. As you know, a recent study conducted by CANR faculty documented that the current value of Michigan's agriculture and forestry industries amounts to $60.1 billion per year. More important, this represents a nearly 60% growth in economic impact over the eight years since the previous study. In addition, tourism is another dynamic and growing sector in our economy.

Michigan State University's first college—the College of Agriculture and Natural Resources—has been educating students who have gone on to join the state's workforce, start companies and families, and build communities here for more than 150 years.

The strongly connected Michigan Agricultural Experiment Station and MSU Extension support Michigan's economy by conducting research and providing science-based knowledge to meet residents' needs and improve their lives. They've followed their core missions since their inception and are using their well-established networks and solid collaboration to contribute to a stronger future for the entire state.

Though the work conducted under the auspices of the broad Agriculture and Natural Resources umbrella at MSU is aimed at providing research, teaching and outreach in every corner of the state, I'd like to spend a few minutes today talking about a few very specific initiatives. The work I'm referring to is focused directly on efforts that are propelling our state into a key role as a leader in the burgeoning bioeconomy and those that are bolstering entrepreneurs and local food and fiber systems.

In areas related to the bioeconomy:

In a very recent development, Michigan is one of 12 Midwestern states that joined together to form the North Central Bioeconomy Consortium (NCBEC). Formally

announced just last week, the consortium was developed by the directors of state agriculture departments, including our own Mitch Irwin, and university Extension and agricultural experiment stations. Besides Michigan, other states in the consortium range from Ohio west to Kansas, north to North Dakota and east back to Michigan. Together, these states have the potential to produce half to two-thirds of the nation's perennial bioenergy crops. The NCBEC already has received a $100,000 grant from the Energy Foundation of San Francisco to coordinate regional public policy development and research for a renewable energy future. The consortium also is collaborating with the Midwest Governors' Association on policy review and development for a proposed energy summit to be held later this year. This initiative underscores the importance of thinking beyond our state's boundaries to realize the full potential of this important sector and to attract the kind of investment needed to make our region the center of biofuels research, development and enterprise activity in the world.

One MSU scientist is providing the research that is powering Working Bugs, a new Webberville company that is partially owned by the Michigan Brewing Company. Working Bugs creates and refines microbes that can be used in a variety of chemical processes such as fermentation, catalysis and other reactions that are used to produce chemicals, foods and fuels.

Another research team is working to identify the key genes that control plant metabolism and determine the levels and types of compounds created by plant metabolic networks. Identifying these genes will allow scientists to breed plants that produce larger quantities of more easily fermentable starches and more easily extracted "designer" oils that can be used in the production of chemicals and other products.

An MSU Extension specialist is partnering with DaimlerChrysler and NextEnergy to grow oilseed crops on a Superfund site in Oakland County. His research is examining whether the site can produce crops that have the quality and yield for biodiesel or ethanol production as well as the potential of the biofuel crops to help clean up the contaminated soil. The research also will help to establish national standards for B-20, a blend of 20 percent biodiesel and 80 percent petroleum diesel.

In one very creative collaboration, an MSU Extension educator who is based in Ottawa County is working with a campus-based MAES forest products researcher to develop building materials that are made from plastic and fibers derived from composted dairy cow manure. So far, the materials have shown properties that surpass similar decking products made with wood and plastics. Though more testing is needed, the products have the potential to offer a new source of building materials to the construction industry, a new line of products for entrepreneurial development and an environmentally sound use for dairy manure. This example also illustrates how MSUE and MAES are inextricably linked in identifying issues that need solutions, developing new discoveries, and developing applications of the discoveries to address the issues.

I would be remiss not to point out the work of the MSU Office of Bio-based Technologies to help foster connections with public and private initiatives to expand Michigan's bioeconomy sector. Office director Steve Pueppke is also director of the MAES, and many MAES researchers are affiliated with the Office, including nationally recognized chemical engineer Bruce Dale.

MSU has a patented process called ammonia fiber expansion (AFEX), developed by Dr. Dale, an MAES researcher, to pretreat biomass with concentrated ammonia. AFEX makes the breakdown of cellulose more efficient. Using enzymes alone, about 15 percent of cellulose and hemicellulose is broken down into simple sugars which can then be fermented into ethanol; when AFEX is used before adding enzymes, more than 90 percent of the cellulose and hemicellulose is broken down. This makes producing cellulosic ethanol less expensive and more efficient.

Our work related to the bioeconomy is not limited to what the land offers. Michigan's windswept hills and shores offer opportunities for generating wind energy. The MSU Extension wind energy education program is helping landowners explore the possibilities for sitting wind turbines on their properties to produce both energy and income. Through the MSU Land Policy Institute MSU Extension is also helping local leaders navigate the new territory of policy making related to wind energy.

When it comes to revitalizing and energizing communities of all sizes researchers and Extension educators are working with consumers, entrepreneurs, community leaders, farmers and other business owners from L'Anse to Lawrence. In addition, strong, thriving local food systems benefit both rural and urban communities. Consumers can purchase fresh produce and can find jobs with food processors while farmers can realize increased profits.

The C.S. Mott Group for Sustainable Food Systems at MSU aims to link farmers and consumers and offer benefits to both groups. The 11-member Mott Group works with individuals, farmers and communities toward a goal of Michigan farms feeding Michigan people and Michigan people supporting local farms.

Composed of researchers and MSU Extension staff members, academic and outreach specialists, the Mott Group's diverse skills allow members to assist people with a range of interests -- from people working to bring fresh food to limited-resource families or to maintain a family farm or investigating how to enter farming or start a farmers' market, to those looking to add local food to a school lunch program, or who want more information about sustainable agriculture -- the Mott Group is a valuable resource.

A Washtenaw County MSU Extension educator and our Monroe County Extension Director have provided leadership for a team of extension and community participants that launched the Five County Food System Economic Partnership (FSEP) in 2005. The FSEP was developed to coordinate agricultural

economic development in Wayne, Jackson, Lenawee, Monroe and Washtenaw counties. It is intended to promote positive changes in the food system while meeting the mutual needs of urban and rural communities.

In its early days the FSEP secured $120,000 in funding from all five counties, the Michigan Corn Marketing Program, Michigan Organic Growers, Greenstone Farm Credit Services, and the Washtenaw MSU Ag Advisory Council to support project management and economic research. Some team members took the lead research role initially, focusing efforts on the development of business plans for agri-food business formation and expansion. This has led to varied enterprise developments including the newly opened ethanol plant in Riga Township, a network of fruit and vegetable growers who link up in cooperation with the Black Farmers Association with fresh markets in Detroit urban neighborhoods, and facilitation of connecting local producers with restaurants and institutional food buyers in the five county area.

In a related program, the MSU Student Organic Farm, created by students, has provided a means for students to learn by doing in developing not only innovative production practices but also innovative marketing systems for connecting local producers with local consumers of fruit and vegetable crops.

Since its founding, MSU's CANR has been steeped in work to promote growth. Originally this focused on crops and livestock, and these are still important areas of emphasis today, but a new effort led by the MSU Product Center, and joined in partnership by the Michigan Economic Development Corporation and the Edward Lowe Foundation is helping communities to grow entrepreneurs.

These entities came together to develop an initiative called Creating Entrepreneurial Communities (CEC). A yearlong experience, the CEC gives teams of community leaders in government, business and education a structure for learning to develop characteristics that will enable their communities to become more attractive to many forms of entrepreneurial activity, including tourism and cultural heritage attractions, food processing, service and manufacturing. The teams represent communities from Boyne City, Charlevoix and East Jordan, Ionia, Marine City, Meridian Township, Huron Shore, Newaygo, St. Clair County and South Haven. All the teams met in February to generate plans that they could take back and immediately begin implementing to address local needs.

This is just one example of how the MSU Product Center has generated the development of new enterprises since it was created jointly by the CANR, MSUE and MAES in 2003 and in partnership with MDA, the Michigan Farm Bureau and the US Department of Agriculture.

Since its inception, the product center has helped entrepreneurs launch more than 50 ventures, created more than 300 jobs and investments of $33 million. These ventures are based in food and fiber systems and natural resource

industries and contribute to local economies through purchases of supplies, facility rent, sales and job creation.

I've touched on a number of our research and Extension priorities; however, our academic mission is also of critical importance to the people of Michigan and the state's economy.

The CANR offers undergraduate and graduate programs in agricultural fields that provide jobs from farm to fork (ANS, HORT, FOR, CSS, AEC, FSHN, PKG), as well as in environmental and natural resources management (FW, ENT, FOR, PPT), tourism and sustainable food systems (CARRS)and emerging fields that support our growing bio-economy (BAE) and our built environment (SPDC).

CANR academic programs serve the families and industries of Michigan. More than 82% of MSU students come from Michigan families -- 89% of undergraduate students and more than 95% of students enrolled in our Ag. Tech. program are from in state.

CANR undergraduate programs, ranging from traditional agriculture and natural resources fields to such diverse areas as packaging, construction management, dietetics, and interior design – prepare students to become leaders in Michigan's economic future. Experiential learning opportunities – including undergraduate research, study in international settings and internships - are integral to these programs.

Our unique research and outreach foci through MAES and MSUE programs inform our academic curricula. Close cooperation and communication with industry and community stakeholders ensures that our classroom-based education continues to evolve to meet Michigan's changing needs.

In our most recent group of graduating students, our Career Services placement survey showed that 86% were placed in employment, continuing education or other pursuits by February 2007 – with average starting salaries of more than $39,000. In some programs, such as packaging and construction management, the placement rate approaches 100%. At our Agriculture Career Fair last October more than 50 employers were represented.

Many CANR graduates remain in Michigan to contribute to our economy and future. That is particularly true of our Ag Tech students, the vast majority of whom remain in Michigan to contribute to the state's economy in industries that include electrical technology, beef cattle, dairy, swine and horse management, landscape & nursery, turf grass and agricultural industries management.

The CANR prepares students to contribute to Michigan's future as graduates who will help grow our bioeconomy, become Michigan's future entrepreneurs

and lead Michigan's agriculture, natural resources and food industries. Investment in these students is vital to Michigan's economic future.

My time today has allowed me to touch on only a few select programs, projects and activities. Though they are disparate in nature they all hold to one central axiom—that the CANR, the MAES and MSUE together are making vital, dynamic contributions that move Michigan's people and economy forward. Thank you for the opportunity to share these highlights with you.